4. SUMMARY OF SOUTH PACIFIC AND SOUTH INDIAN OCEAN TROPICAL CYCLONES

4.1 GENERAL

On 1 October 1980, JTWC's area of responsibility (AOR) was expanded to include the Southern Hemisphere from 180° east longitude, westward to the coast of Africa. Details on Southern Hemisphere tropical cyclones and JTWC warnings from July 1980 through June 1982 are contained in Diercks et al. (1982) and from July 1982 through June 1984, in Wirfel and Sandgathe (1986). Information on Southern Hemisphere tropical cyclones after June 1984 can be found in the applicable Annual Tropical Cyclone Report.

The NAVPACMETOCCEN, Pearl Harbor, Hawaii issues warnings on tropical cyclones in the South Pacific, east of 180° east longitude. In accordance with CINCPACINST 3140.1W, Southern Hemisphere tropical cyclones are numbered sequentially from 1 July through 30 June. This convention is established to encompass the Southern Hemisphere tropical cyclone season, which primarily occurs from January through April. There are two Southern Hemisphere ocean basins for warning purposes - the South Indian (west of 135° east longitude) and the South Pacific (east of 135° east longitude) - which are identified by appending the suffixes "S" and "P," respectively, to the tropical cyclone number.

Intensity estimates for Southern Hemisphere tropical cyclones are derived from the interpretation of satellite imagery using the Dvorak (1984) technique and, when available, from surface observations and scatterometer data. The Dvorak technique relates specific cloud signatures to maximum sustained one-minute average surface wind speeds. The conversion from maximum sustained winds to minimum sea-level pressure is obtained from Atkinson and Holliday (1977) (Table 4-1).

4.2 SOUTH PACIFIC AND SOUTH INDIAN OCEAN TROPICAL CYCLONES

The total number of significant tropical cyclones during the 1995 season (1 July 1994 - 30 June 1995) (Table 4-2) was 22 which was five less than the overall climatological mean for the past 15 years as shown in Table 4-3. Looking at the annual variation of Southern Hemisphere Tropical Cyclones by ocean basins (Table 4-4), it becomes apparent that tropical cyclone activity was less than normal in all Southern Hemisphere basins in JTWC's AOR.

Table 4-1 MAXIMUN SUSTAINED 1-MINUTE MEAN SURFACE WINDS AND EQUIVALENT MINIMUM SEA LEVEL PRESSURE (ATKINSON AND HOLLIDAY, 1977) RELATIONSHIP

WIND-KT	(M/SEC)	PRESSURE (MB)
30	(15)	100
35	(18)	997
40	(21)	994
45	(23)	991
50	(26)	987
55	(28)	984
60	(31)	980
65	(33)	976
70	(36)	972
75	(39)	967
80	(41)	963
85	(44)	958
90	(46)	954
95	(49)	948
100	(51)	943
105	(54)	938
110	(57)	933
115	(59)	927
120	(62)	922
125	(64)	916
130	(67)	910
135	(69)	906
140	(72)	898
145	(75)	892
150	(77)	885
155	(80)	879
160	(82)	872
165	(85)	965
170	(87)	858
175	(90)	851
180	(93)	844

The JTWC was in warning status a total of 107 days, which included 22 days when warnings were issued on two or more Southern Hemisphere tropical cyclones. A chronology of the tropical cyclone activity is provided in Figure 4-1. Composites of the best tracks appear in Figures 4-2 and 4-3.

Table 4-2 SOUTH PACIFIC AND SOUTH INDIAN OCEAN SIGNIFICANT TROPICAL CYCLONES

TROPICAL CYCLONE	PERIOD OF WARNING	NUMBER OF WARNINGS ISSUED	ESTIMATED MAXIMUM SURFACE WINDS KT (M/SEC)	ESTIMATED MSLP (MB)
01P VANIA	13 NOV - 17 NOV	10	55 (28)	984
02S ALBERTINE	24 NOV - 01 DEC	17	115 (59)	927
03S ANNETTE	15 DEC - 19 DEC	9	110 (57)	933
04P* -----	15 DEC - 16 DEC	4*	35 (18)	997
05P* WILLIAM	31 DEC - 03 JAN	7*	65 (33)	976
06S BENTHA	03 JAN - 06 JAN	10	55 (28)	984
07S CHRISTELLE	06 JAN - 09 JAN	6	40 (21)	994
08S DORINA	20 JAN - 29 JAN	20	100 (57)	944
09S FODAH	24 JAN - 26 JAN	6	45 (23)	990
10S GAIL	05 FEB - 11 FEB	13	75 (39)	967
11S HEIDA	05 FEB - 07 FEB	5	40 (21)	994
12S BOBBY	21 FEB - 26 FEB	17	110 (57)	933
13S INGRID	24 FEB - 01 MAR	12	100 (51)	944
14P VIOLET	03 MAR - 07 MAR	11	75 (39)	967
15P WARREN	05 MAR - 06 MAR	4	55 (28)	984
16S JOSTA	07 MAR - 12 MAR	11	65 (33)	976
17S KYLIE	07 MAR - 14 MAR	16	85 (44)	958
18P* -----	16 MAR - 17 MAR	2*	30 (15)	1000
19S MARLENE	30 MAR - 10 APR	36	125 (64)	916
20S -----	03 APR - 05 APR	7	25 (13)	1002
21S CHLOE	05 APR - 08 APR	14	125 (64)	916
22P AGNES	17 APR - 22 APR	21	110 (57)	933
JTWC total		245		
Issued by NPMOC		13*		
Grand total		258		

* Warnings issued by NAVPACMETOCCEN (NPMOC)

Table 4-3 MONTHLY DISTRIBUTION OF SOUTH PACIFIC AND SOUTH INDIAN OCEAN TROPICAL CYCLONES

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
(1959-1978) AVERAGE*	-	-	-	0.4	1.5	3.6	6.1	5.8	4.7	2.1	0.5	-	24.7
1981	0	0	0	1	3	2	6	5	3	3	1	0	24
1982	1	0	0	1	1	3	9	4	2	3	1	0	25
1983	1	0	0	1	1	3	5	6	3	5	0	0	25
1984	1	0	0	1	2	5	5	10	4	2	0	0	30
1985	0	0	0	0	1	7	9	9	6	3	0	0	35
1986	0	0	1	0	1	1	9	9	6	4	2	0	33
1987	0	1	0	0	1	3	6	8	3	4	1	1	28
1988	0	0	0	0	2	3	5	5	3	1	2	0	21
1989	0	0	0	0	2	1	5	8	6	4	2	0	28
1990	2	0	1	1	2	2	4	4	10	2	1	0	29
1991	0	0	1	1	1	3	2	5	5	2	1	1	22
1992	0	0	1	1	2	5	4	11	3	2	1	0	30
1993	0	0	1	1	0	5	7	7	2	2	2	0	27
1994	0	0	0	0	2	4	8	4	9	3	0	0	30
1995	0	0	0	0	2	2	5	4	5	4	0	0	22
TOTAL	5	1	5	8	23	49	89	99	70	44	14	2	409
(1981-1995) AVERAGE	0.3	0.1	0.3	0.5	1.5	3.3	5.9	6.6	4.7	2.9	0.9	0.1	27.3

* (GRAY, 1979)

Table 4-4 ANNUAL VARIATION OF SOUTHERN HEMISPHERE TROPICAL CYCLONES BY OCEAN BASINS

YEAR (1959-1978)	SOUTH INDIAN (WEST OF 105°E)	AUSTRALIAN (105°E - 165°E)	SOUTH PACIFIC (EAST OF 165°E)	TOTAL
AVERAGE*	8.4	10.3	5.9	24.6
1981	13	8	3	24
1982	12	11	2	25
1983	7	6	12	25
1984	14	14	2	30
1985	14	15	6	35
1986	14	16	3	33
1987	9	8	11	28
1988	14	2	5	21
1989	12	9	7	28
1990	18	8	3	29
1991	11	10	1	22
1992	11	6	13	30
1993	10	16	1	27
1994	16	10	4	30
1995	11	7	4	22
TOTAL (1981-1995)	186	146	77	409
AVERAGE	12.4	9.7	5.1	27.3

* (GRAY,1979)

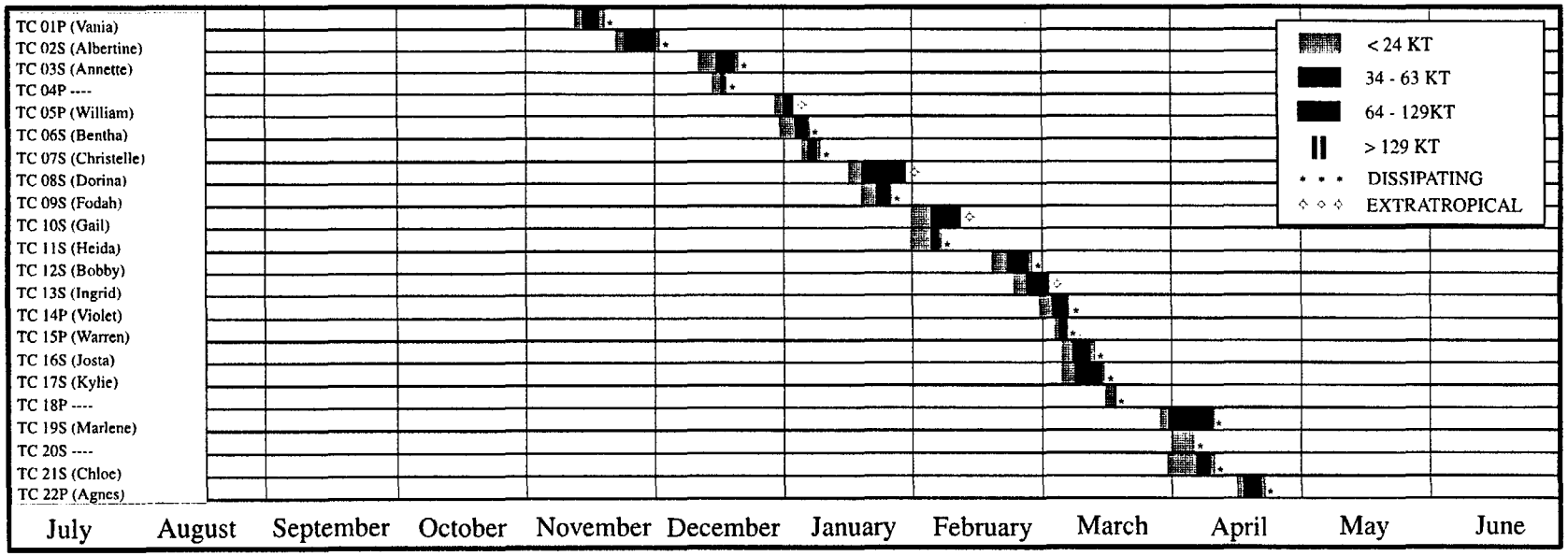

Figure 4-1 Chronology of South Pacific and South Indian Ocean tropical cyclones for 1995 (1 July 1994 - 30 June 1995).

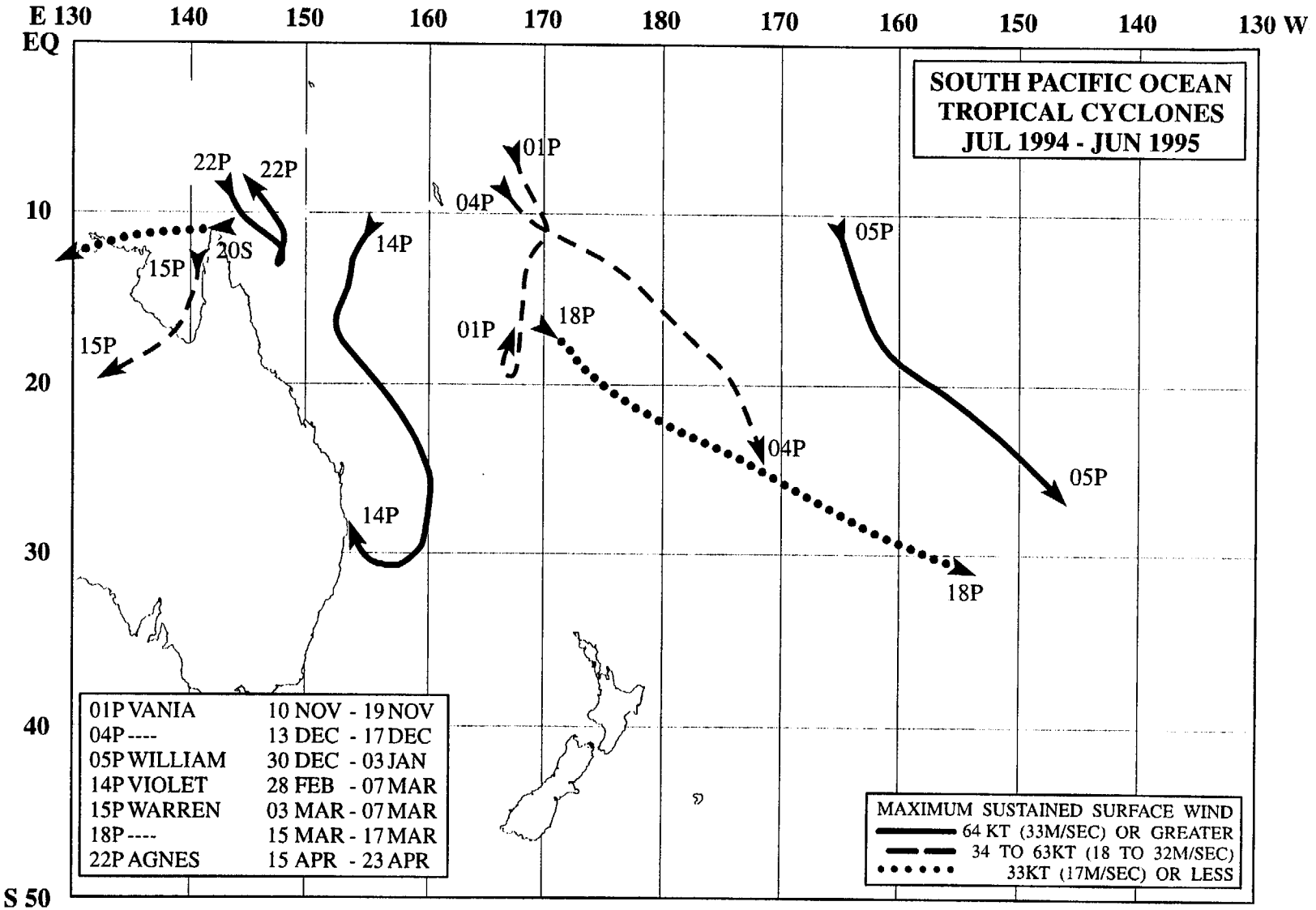

Figure 4-2 Tropical cyclone best tracks east of 130° east longitude.

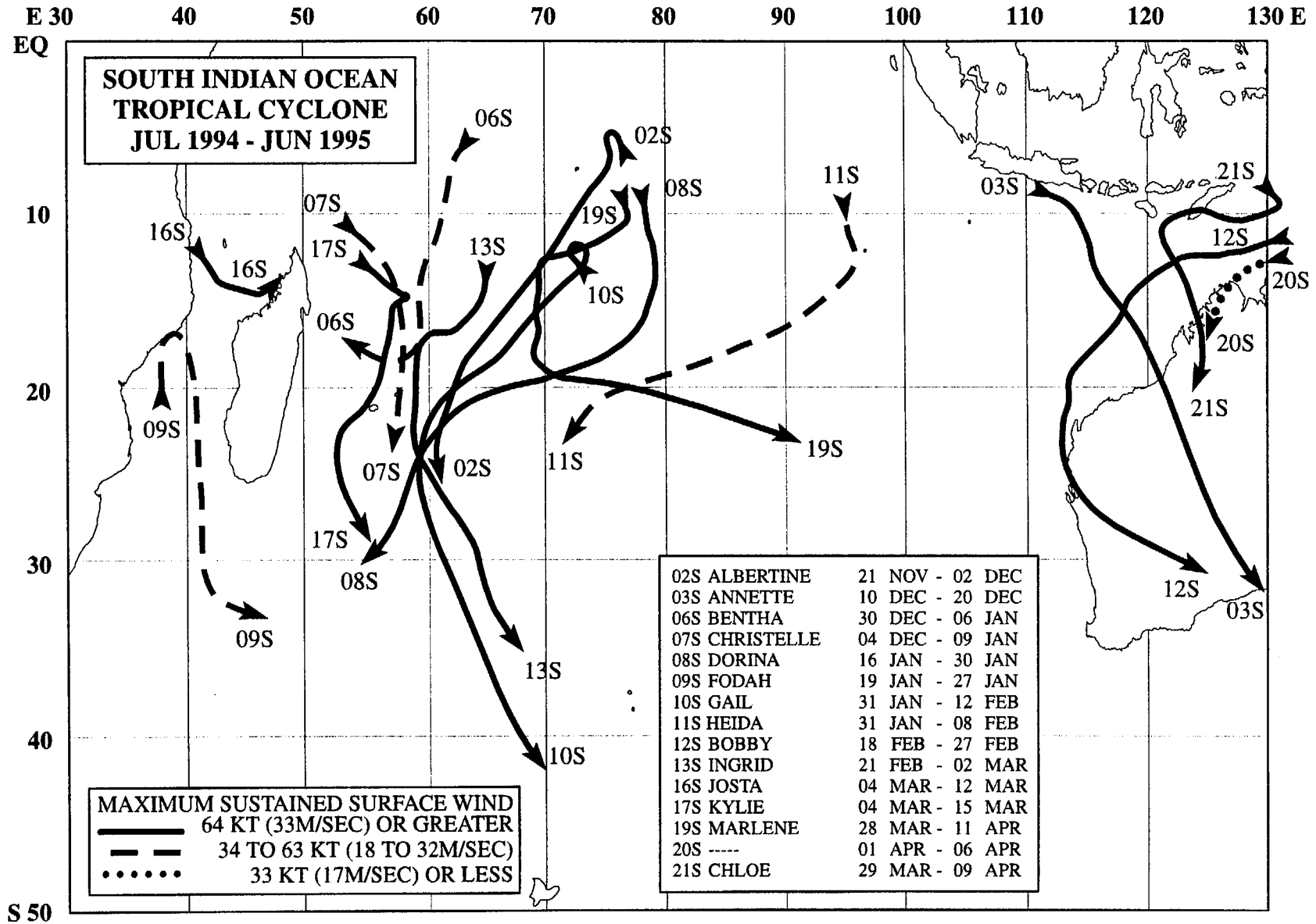

Figure 4-3 Tropical cyclone best tracks west of 130° east longitude.